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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,214	09/17/2003	Vincent P. Marzen	02CR305/KE	3359

7590 07/17/2008

Attention: Kyle Eppele
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EXAMINER	
NGUYEN, KEVIN M	
ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
07/17/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/664,214	MARZEN ET AL.	
	Examiner	Art Unit	
	KEVIN NGUYEN	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

Applicant's arguments, see pre-appeal brief, filed on 3/20/2008, with respect to the rejection(s) of claim(s) 1-20 under prior art of record have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Eichen et al (US 3,720,948).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichen et al. (US 3,720,948, Eichen) in view of Duwaer (US 5,402,151).

As to claim 1, Eichen teaches a touch screen display apparatus, comprising:

a display device having a viewing area with a periphery; (see col. 3, line 51, a tablet 21, a border region, fig. 1, col. 4, lines 35-37.)

a plurality of shockwave detectors disposed about said periphery; (microphones 23-24 are arranged at the border region.)

said plurality of shockwave detectors configured to use a time of arrival of a tap-generated shockwave to determine a point of original the tap-generated of the shockwave in the tablet which results from a touch occurring at said point of origin. (see col. 4, lines 35-61, and col. 5, lines 36-37, lines 49-51.)

Eichen fails to teach a liquid crystal panel.

Duwaer teaches a digitizing tablet 12 and a touch screen 10, both have been integrated on a liquid crystal panel 14, col. 8, lines 29-44.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the liquid crystal panel as taught by Duwaer in the tablet of Eichen to integrally become the touch screen LCD display panel. The motivation for doing so would provide the visual feedback to the user, while fabricating the touch screen LCD display panel at low power dissipation, and low cost, col. 4, lines 17-21, lines 40-43 of Duwaer.

As to claim 2, Eichen teaches a display of claim 1 wherein said periphery is free from a plurality of pairs of opposing transmitters and receivers are disposed about said periphery where said plurality of pairs of opposing transmitters and receivers are configured to detect a presence of an object disposed on the viewing area and between said transmitters and receivers *(fig. 1 of Eichen does NOT disclose the boundary of the tablet 21 which has transmitter and receiver pairs disposed thereon).*

As to claim 3, Miwa teaches a display of claim 2 wherein said viewing area is free from an electrically conductive transparent layer and free from a connection to an electronic detections means which is configured to detect touching *(fig. 1 of Eichen does NOT disclose and NOT electrically connect the boundary of the tablet 21 which has transmitter and receiver pairs disposed on a plan area of said tablet 21).*

As to claim 4, in the alternate embodiments, Eichen discloses a display of claim 1 further teaches comprising a first array of shockwave detectors, disposed along a horizontal edge (24, fig. 1), which define a plurality of columns across said viewing area; and a second array of

shockwave detectors, disposed along a vertical edge (23, fig. 1), which defines a plurality of rows across said viewing area (a plan area 215, fig. 2).

As to claim 5, a display of claim 4 further comprising a third array of shockwave detectors opposite said first array of shockwave detectors and a fourth array of shockwave detectors opposite the second array of shockwave detectors.

Eichen teaches horizontal microphone 24 and vertical microphone 23.

Eichen fails to teach a third array of shockwave detectors opposite said first array of shockwave detectors and a fourth array of shockwave detectors opposite the second array of shockwave detectors.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to respectively provide the third microphone and the fourth microphone as taught by Eichen to be opposite the horizontal microphone 24 and the vertical microphone 23. The motivation for doing so would improve the high precision of the point being touched, col. 5, lines 51-57 of Eichen. It would have been obvious matter of design choice to make separation of the horizontal microphone 24 and the vertical microphone 23. A make separation is generally recognized as being within the level of ordinary skill in the art. Nerwin V. Erlichman, 168 USPQ 177, 179 (PTO Bd. of Int. 1969).

As to claim 11, in the alternate embodiments, Eichen teaches a method of detecting a touch on a viewing panel of a display, comprising the steps of:

providing a display tablet, said display having a viewing area (col. 3, line 51 discloses display graphics, a tablet 21 and a plan area 215, figs. 1 and 2);

tapping a first location on said viewing area and thereby generating a shockwave as a result of such tapping (fig. 1, and col. 5, lines 45-51).

providing a plurality of shockwave detectors which are not located at a single location (microphones 23 and 24, fig. 1);

detecting an arrival of said shockwave at each of said plurality of shockwave detectors, determining a time of arrival of said shockwave at each of said plurality of shockwave detectors, locating said first location in response to said step of determining a time of arrival of said shockwave. (see col. 4, lines 35-61, col. 5, lines 36-37, lines 49-51.)

Eichen fails to teach a display panel comprising a liquid crystal material

Duwaer teaches a digitizing tablet 12 and a touch screen 10, both have been integrated on a liquid crystal panel 14 including a liquid crystal molecules, col. 8, lines 29-44.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the liquid crystal panel as taught by Duwaer in the tablet of Eichen to integrally become the touch screen LCD display panel . The motivation for doing so would provide the visual feedback to the user, while fabricating the touch screen LCD display panel at low power dissipation, and low cost, col. 4, lines 17-21, lines 40-43 of Duwaer.

As to claim 12, a method of claim 11 wherein said relative time of arrival is based upon a plurality of times of arrival of said shockwave at a plurality of shockwave detectors. (Eichen discloses in col. 5, lines 36-37.)

As to claim 13, a method of claim 12 wherein said step of detecting an arrival of said shockwave comprises the steps of detecting a change in a predetermined electrical characteristic

of said tablet in response to a presence of said shockwave. (Eichen discloses in col. 5, lines 30-57.)

Eichen fails to teach detecting a change in a predetermined electrical characteristic of said liquid crystal material in response to a presence of ultrasonic wave.

Duwaer teaches in col. 4, lines 17-21, lines 35-48, and col. 8, lines 29-44.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate "the change in a predetermined electrical characteristic of said liquid crystal material in response to a presence of ultrasonic wave" as taught by Duwaer in the tablet of Eichen to integrally become the touch screen LCD display panel . The motivation for doing so would provide the visual feedback to the user, while fabricating the touch screen LCD display panel at low power dissipation, and low cost, col. 4, lines 17-21, lines 40-43 of Duwaer.

As to claim 14, a method of claim 12 wherein said step of detecting an arrival of said shockwave comprises the steps of detecting a change in a predetermined optical characteristic of said tablet in response to a presence of said shockwave. (Eichen discloses in col. 5, lines 30-57.)

Eichen fails to teach detecting a change in a predetermined electrical characteristic of said liquid crystal material in response to a presence of ultrasonic wave.

Duwaer teaches in col. 4, lines 17-21, lines 35-48, and col. 8, lines 29-44.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate "the change in a predetermined electrical characteristic of said liquid crystal material in response to a presence of ultrasonic wave" as taught by Duwaer in the tablet of Eichen to integrally become the touch screen LCD display panel . The motivation for doing so

would provide the visual feedback to the user, while fabricating the touch screen LCD display panel at low power dissipation, and low cost, col. 4, lines 17-21, lines 40-43 of Duwaer.

As to claim 15, a method of claim 11 wherein said step of locating said first location comprises using a triangulation computation (Eichen discloses in col. 42, lines 23-31).

As to claim 16, a method of claim 11 wherein said step of locating said first location comprises a determination of a row and a column (Eichen teaches in col. 42, lines 4-22).

As to **claim 17**, in the alternate embodiments, Eichen teaches an apparatus for detecting a sense of touch upon a viewing area of a display, comprising:

a tablet panel having a viewing area, with a periphery; (a tablet 21, a border region, fig. 1, col. 3, line 51, and col. 4, lines 35-37.)

a plurality of shockwave detectors disposed about said periphery of said viewing surface (microphones 23 and 24, fig. 1);

means for performing a triangulation computation to determine a location of a point of tactile stimulation on said viewing surface, said means for performing being responsive to signals representative of a detection of a tap-generated shockwave, generated at said point of tactile stimulation, by said plurality of detectors. (see col. 4, lines 35-61, col. 5, lines 36-37, lines 49-51.)

Eichen fails to teach a liquid crystal display.

Duwaer teaches a digitizing tablet 12 and a touch screen 10, both have been integrated on a liquid crystal display 14, col. 8, lines 29-44.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the liquid crystal panel as taught by Duwaer in the tablet of Eichen to

integrally become the touch screen LCD display panel . The motivation for doing so would provide the visual feedback to the user, while fabricating the touch screen LCD display panel at low power dissipation, and low cost, col. 4, lines 17-21, lines 40-43 of Duwaer.

Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichen view of Duwaer, and further in view of Umemoto et al. (US 6,891,530, Umemoto).

As to claim 6, Eichen and Duwaer teach all of the claimed limitation of claim 4/1, except wherein said liquid crystal panel is a multi-domain vertically aligned liquid crystal cell.

Umemoto teaches a touch panel integrated a reflected liquid crystal panel 70, which comprises a liquid crystal cell/molecules 54. The liquid crystal molecules 54 is a multi-domain vertically aligned cell, Fig. 1 and 4, col. 15, lines 30-47 and col. 15, lines 48-55.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the liquid crystal molecules of Duwaer to become vertically aligned cell in the liquid crystal molecules as taught Umemoto. The motivation for doing so would provide a touch-input type reflective liquid-crystal display device bright, easy to view and excellent in low electric power consumptions (see Umemoto, col. 15, lines 5-7).

As to claim 7, a display of claim 6 further comprising means for determining a location of a tactile interaction on said viewing area by analyzing a time of arrival difference of a shockwave, due to said tactile interaction, on at least two non-co-located points (Eichen teaches col. 5, lines 16-57).

As to claim 8, a display of claim 7 further comprising an active thin film transistor layer in said liquid crystal panel, wherein said first array of shockwave detectors is integrated into said thin film transistor layer. *(In the alternate embodiment, figure 4 of Duwaer teaches the touch*

screen LCD 14 which includes a thin film transistor layer underneath comprising four elastic devices 104, 106, 108 and 110, each elastic device 104-110 comprises a train gauge, col. 8, lines 52-56. Digitizing tablet 12 and touch screen 10 include surface acoustic waves (SAW) both have been integrated on LCD 14, col. 8, lines 31-34).

As to claim 9, a display of claim 8 wherein said first array of shockwave detectors is configured to detect a change of capacitance of said liquid crystal material in response to presence of a shockwave. *(Duwaer teaches electronic circuitry is provided for detecting a capacitive coupling from sheet 10 and 12 towards earth via finger 130 and for thereupon deriving the finger's 130 position, Fig. 5, col. 9, lines 13-16).*

As to claim 10, a display of claim 8 wherein said first array of shockwave detectors is configured to detect a change of resistance of said liquid crystal material in response to presence of a shockwave *(Duwaer teaches the homogeneous electrically resistive sheet 10 and 12 plays a part in both digitizing tabled 12 and touch screen 10, col. 9, lines 9-11).*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the liquid crystal panel as taught by Duwaer in the tablet of Eichen to integrally become the touch screen LCD display panel. The motivation for doing so would provide a minimum parallax which can be attained owing to the highly compact structure, while fabricating the touch panel at low cost and light weight. (Duwaer, col. 9, lines 61-64).

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichen in view of Duwaer, and further in view of Wilson et al. (US 6,504,530, Wilson).

As to claim 18, Eichen and Duwaer teach all of the claimed limitation of claim 17, except wherein said plurality of shockwave detectors comprises a plurality of optical sensors disposed

on a layer having thin film transistors thereon, where said plurality of optical sensors measures an optical characteristic of a segment of said liquid crystal material.

Wilson teaches a touch screen system which includes acoustic wave sensors comprising optical sensors 1307 and 1309 disposed on a liquid crystal layer 1301 and a pair of PVDF thin film piezoelectric strain gauges. The optical sensor 1307 and 1309 must continue to scan the IR beam across the active touch region in order to respond to a touch, Fig. 13, col. 10, lines 18-24, col. 9, line 66 through col. 10, lines 6, and col. 10, lines 57-59.

As to claim 19, an apparatus of claim 18 wherein said optical characteristic is a brightness of light reflection. *(Wilson teaches reflective grids 705 of a surface on an opposite side of said liquid crystal material from said layer, fig. 7, col. 7, lines 48-58).*

As to claim 20, an apparatus of claim 19 wherein said means for performing a triangulation computation determines a relative time of arrival of a shockwave at said plurality of shockwave detectors. (Eichen teaches in col. 42, lines 23-31).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate optical sensors for detecting the wave as taught by Wilson in the LCD panel of Duwaer. The motivation for doing so would improve the high accuracy of the point being touched (Wilson, col. 9, lines 17-20), while fabricating the touch panel with minimizing the power consumption (Wilson, col. 10, lines 50-54).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN NGUYEN whose telephone number is (571)272-7697. The examiner can normally be reached on Monday-Thursday from 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571)272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KEVIN NGUYEN/
Primary Examiner, Art Unit 2629